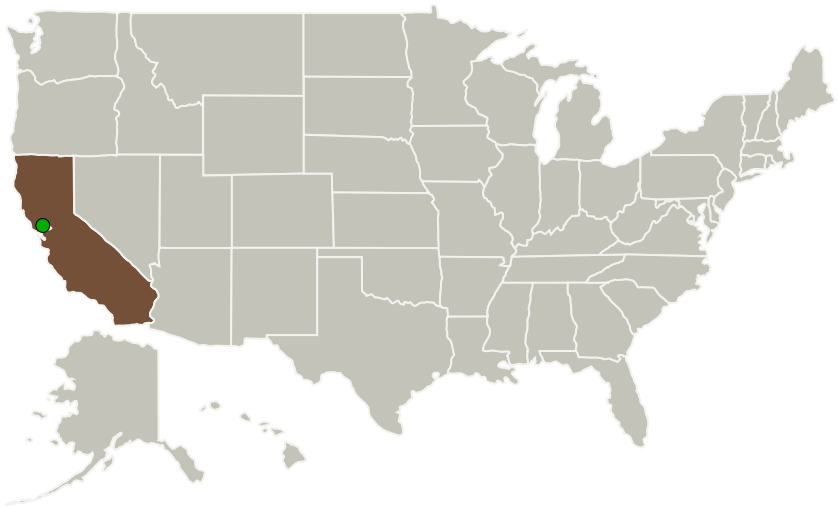
Networked Communications and Speech System for Airspace System Assessments, Phase II

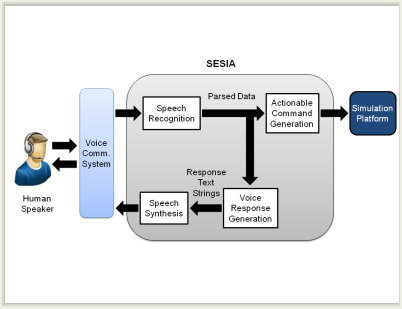
Completed Technology Project (2013 - 2015)

Project Introduction

Extensive human-in-the-loop testing of NextGen concepts and technologies is typically required in a controlled lab environment before they can be integrated for evaluation in the field. The experiments tend to require the participation of a large number of subject-matter experts (SMEs) including air traffic controllers (ATC) and (pseudo-)pilots, which makes the experiments costly and the logistics with so many participants make them difficult to plan. These experiments often are designed only to collect data from either ATC or the pilots, but not both; the counterpart is needed only to provide realism in communication between them. The proposed research will develop a Speech-Enabled Simulation Interface Agent (SESIA) to replace the non-essential human subjects in these experiments. SESIA can interact with the SMEs through voice communication, and interface with the simulation platform to perform the intended control. It has the benefit of reduced cost associated with the experiments and increased convenience in their planning, thus allowing the opportunities to schedule additional testing. In cases where a pseudo-pilot would normally represent multiple flights and communicate to the ATC with the same voice for all flights, SESIA will actually increase the realism of the experiments by allow different voices to be synthesized to simulate different pilots.

Primary U.S. Work Locations and Key Partners





Networked Communications and Speech System for Airspace System Assessments Project Image

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Organizations Performing Work	Role	Type	Location
Optimal Synthesis, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Los Altos, California
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations
California

Project Transitions

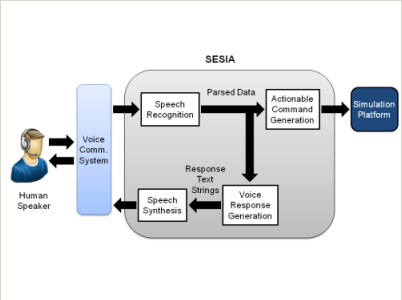
January 2013: Project Start

June 2015: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137302)*

Images



Project Image
Networked Communications and Speech System for Airspace System Assessments Project Image *(https://techport.nasa.gov/image/126446)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Optimal Synthesis, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Victor H Cheng

Co-Investigator:

Victor H Cheng

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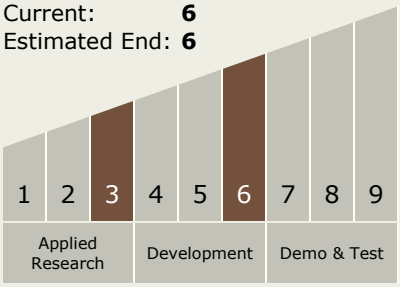
Completed Technology Project (2013 - 2015)

Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.2 Flight Mechanics
    - TX15.2.3 Flight Mechanics Testing and Flight Operations

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System